The Cannon Conquest of Nāṣrid Spain and the End of the Reconquista

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Great towns—which once could have held out a year against all foes but hunger—now fell in a month.

Andreás Bernáldez, Memorias

So when we became weak, the Spaniards camped in our land and smote us town after town, bringing many great cannons that broke down their brawny walls.

Anonymous Granadan, circa 1501

THE coincidence of Spain's final subjugation of Islamic Granada in 1492 with the five hundredth anniversary of the discovery of the New World provides an opportunity for military historians to rediscover the "last Reconquista." Oddly, the 1481-92 Granada War, has never been a favorite of military scholars, even though the struggle took place in the dawning decades of the "Early Modern Military Revolution." As historians, they have even more boldly ignored "the decisive role of artillery in the last struggle against the Moors." Yet, recognized or not,

- 1. Columbus readily tied the success he expected from his voyages to the epic defeat of the last Islamic stronghold in Iberia just completed by his royal patrons. The Four Voyages of Christopher Columbus, translated by J. M. Cohen (Harmondsworth, 1969), 3; Alonso de Santa Cruz, Crónica de los reyes catolicos, ed. Juan de Mata Carriazo, vol. 1 of 2 vols. (Seville, 1951), 1:64-67.
- 2. Miguel Angel Ladero-Quesada, Castilla y la conquista del reino de Granada (Madrid, 1967), 16-17. Castilla is still the most thoroughly analytic study of the war, a contribution to Spanish history and the "New Military History" as well. The author also wrote a valuable study of a single campaign, the 1489 siege of Baza (Milicia y economia en la guerra de Granada—cerco de Baza [Valladolid, 1964]). His Granada—historia de un país islámico (Madrid, 1969) pronounced the war "medieval and modern together" (138-39) and comments on tactics and strategies (126-30).
- 3. So complained Jean Hippolyte Mariéjol in *The Spain of Ferdinand and Isabella*, translated and edited by Benjamin Keen (New Brunswick, 1961), 199 in 199-204.

the Castilian conquest of Muslim Spain was a key milestone in the military revolution process because cannons truly dictated the war's outcome. Gunpowder firepower and artillery siege operations won the Granadan war, and other factors in the Spanish victory were actually secondary and derivative.

This cannon conquest thesis may strike some as self-evident, but it remains a thesis only occasionally propounded and never really examined.⁴ In modern times, the war for Muslim Spain is eclipsed by the global impact of Europe's conquest of the Americas. In its own time, however, defeat of the Granada Amirate was no local Spanish event. Observers like Mártir and Bernáldez saw the extinction of Granada as key to Spain's national identity and unity, but also as a step towards reclamation of the entire Holy Land from Islam.⁵ Beyond Iberia, Granada's fall set off shock waves that disrupted regional balances long after 1492. Heir of seven centuries of an independent Islamic Iberian civilization, Granada, and its ruling house, the Nasrid dynasty, had ties to Cairo, North Africa, and the powerful Ottoman Empire. 6 As uprooted and persecuted refugees after the war, thousands of Muslim (and Jewish) Granadans became agents of diffusion for gunpowder skills, tactics, and technologies throughout the Islamic world. Because artillery so shaped its operations and conduct, the War for Granada bore far greater resemblance to Valois eviction of England from France or the Ottoman conquest of Byzantium and the Balkans than to earlier Reconquista campaigns.

The absence of a detailed study focused on the "Cannon Conquest" of Muslim Spain is thus rather ironic because the muscularity of Castile's

- 4. Jorge Vigón, for example, notes various sieges but never quite risks a definitive evaluation of artillery's impact on the war itself (Historia de la Artillería Española [Madrid, 1947], 93-101). Almost any history of modern Europe will include the conquest as background to the emergence of Spain or Europe's "New Monarchs" with their centralizing states and militaries. For examples, see Eugene F. Rice, Jr., The Foundations of Early Modern Europe (New York and London, 1970), 167; DeLamar Jensen, Renaissance Europe (Lexington, Ky., 1981), 232-37; Henry Kamen, Spain, 1469-1714: A Society of Conflict (London and New York, 1980), 32-37; J. Hillgarth, The Spanish Kingdoms, 2 vols. (Oxford, 1978), 2:376-77 and 392 of 367-93.
- 5. Pedro Mártir de Anglería, Epistolarios, trans. José Lopez de Toto in Documentos inéditos para la Historia de España (DIHE), vol. 9 (Madrid, 1955), 171-81; Andréas Bernáldez, Memorias del reinado de los Reyes Católicos, ed. M. Gómez-Moreno and J. de la Mata Carriazo (Madrid, 1962), 103-7.
- 6. A recent treatment of the international context is Luis Suárez Fernández's Los reyes católicos: El Tiempo de la Guerra de Granada (Madrid, 1989); A. Hess, "The Moriscos: An Ottoman Fifth Column in Sixteenth Century Spain," American Historical Review 74 (October 1968): 1-25. For a sixteenth-century view, see Alonso de Palencia's Narrato Belli Adversus Granatenses, (trans. A. Paz y Melía as Guerra de Granada, reprinted in Crónica de Enrique IV [Madrid, 1975]), 3: 79-85.

artillery almost refuses to let anyone escape expressing an opinion on the cannon factor in Christian Spain's victory. Fifteenth, sixteenth, and seventeenth century European sources are too fixated on the force and violence of gunpowder warfare to let later scholars slink easily past the question. Muslim sources contemporary with the war echoed European horror and fascination with firepower. Thus, it should not be startling that some historians simply assert that artillery gave Ferdinand his victory. However, they either shy away from demonstrating this hypothesis or else dilute it by elevating contributory or secondary factors to the level of decisive. An unequivocal statement of a cannon conquest thesis, backed by systematic study, is still lacking.

For example, the most detailed modern narrative of the Granada campaigns, a richly illustrated chapter of the *Historia de España* by Juan de Mata Carriazo, repeatedly records the use of artillery but offers little analysis of its total significance. ¹⁰ Likewise, Ladero-Quesada, in his brilliant reconstruction of the war, *Castilla y la conquista del reino*

- 7. Fernando del Pulgar, writing in 1491, implied that cannons won the war (Crónica de los Reyes Católicos: Guerra de Granada, ed. Juan de la Mata Carriazo, vol. 2 of 2 vols. [Madrid, 1943], 2:159, 169, 197-201, 224, 230). Key Castilian primary sources are Palencia, Bernáldez, and Diego de Valera (Crónica de los Reyes Católicos, ed. J. de la Mata Carriazo [Madrid, 1927]). Three sources on the war's last years are: Fernando de Zafra in Colección de Documentos inéditos para la historia de España (CDIHE), vol. 11 (Madrid, 1847), 461-533; Mártir (DIHE, 9:34-181) and de Santa Cruz (Crónica) above.
- 8. A main Granadan account, the anonymous Nubdhat al-Asr fi akhbār mulūk Banī Nasr, ed. and trans. A. al Bustani and Carlos Quiros (Larache, 1940), gives Arabic and Spanish texts; much later, Abu'l Abbas al-Maqqarī of Algeria wrote a history from Moroccan sources now lost (Nash at-Tīb min Ghusni-l-Andalusi-r-Ratib, ed. Ihsan Abbās, 8 vols. [Beirut: Dar Sadar, 1968], 4: 510-35); Hernando de Baeza, Las Cosas que paseron entre los Reyes de Granada, in Relaciones de algunos sucesos de los últimos tiempos del reino de Granada, ed. E. Lafuente-Alacantra (Madrid, 1868), 1-44; a lost bit of Baeza was published by J. Mata Carriazo as "Une continuación inédita de la Relación de Hernando de Baeza," Al-Andalus 13 (1948), Fasc. 2, 431-42); an unknown Castilian added some insights, edited by J. Mata Carriazo in "La Historia de la Casa Real de Granada, anonimo Castellano de mediados del siglo XVI," Miscelanea de estudios árabes y hebraicos 4 (1957): 7-58. Besides Spanish works above, see, in French, Rachel Arié's wonderful L'Espagne Musulmane au temps de Nasirides, 1231-1492 (Paris, 1979), note 261-62; in English an exciting new work is L. P. Harvey's Islamic Spain, 1250-1500 (Chicago and London, 1990). He covers the war on pages 265-323.
- 9. For summary (but unsubstantiated) deductions, note Ladero-Quesada, Granada, 126-30, 139; John R. Hale, War and Society in Renaissance Europe, 1450-1620 (New York, 1985), 47-48; Fernand Braudel, The Mediterranean and the Mediterranean World in the Age of Philip II, Siân Reynolds trans., 2 vols. (London, 1972-73), 2:780-86, 840; Andrew C. Hess, The Forgotten Frontier (Chicago, 1968), 11-25.

10. Juan de la Mata Carriazo, "Historia de la Guerra de Granada," Historia de España, vol. 17, ed. R. Menendez Pidal (Madrid, 1969), 387-914.

de Granada (1967 and 1989), proclaims artillery "one of the fundamental reasons for Castilian success." ¹¹ Conversely, he notes "Granadans had few artillery pieces . . . a deprivation almost total and thus one of the causes for the fall of the regime [was the paucity and obsolescence of Granadan artillery]." ¹² But Ladero-Quesada, like Carriazo and others, did not really attempt to sustain a focused argument that "artillery won the war." His references to cannon sieges are too few and incidental to argue that artillery proved decisive or innovative. A chapter devoted specifically to hand guns provides various facts and anecdotes, but is surprisingly terse for such a revolutionary development. ¹³ In sum, Ladero-Quesada reviewed some of the data for classifying the war as a cannon conquest and even approached that conclusion at times. But, in the end, he avoided so definitive a verdict.

General military historians have said far less. ¹⁴ Their narratives usually vault from the 1453 conquest of Byzantium or the 1470s Franco-Burgundian wars to the Renaissance invasion of Italy in 1494 with little or no mention of Granada, not even as a transition stage. ¹⁵ Christopher

- 11. Ladero-Quesada, Castilla, 14-15. See also 117-18, and Granada, 130.
- 12. Ladero-Quesada, Castilla, 127-28.
- 13. Ibid., 128. Proliferation of the espingard threads throughout the sources, often deployed in infantry firing teams mixing crossbowmen with arquebusiers (ballesteros y espingarderos). (Pulgar, Crónica, 2:7-9, 76-78, 117, 125, 155-56, 167, 221-24, 284, 288, 290, 294, 298, 319-20, 324; Valera, Crónica, 152, 154, 155, 160, 162, 187, 203, 211, 215-17, 228-30, 233, 239-41, 253, 255, 257, 260-64; Palencia, Guerra, 94-95, 104, 108, 122, 145, 166-68, 179-84, 186, 211, 223, 234; Bernáldez, Memorias, 122, 167, 180, 183, 231.)
- 14. Ferdinand Lot, L'art militaire et les armeés au moyen age en Europe et dans le Proche Orient, 2 vols. (Paris, 1946), 2:309-12, 320-22; Archer Jones is silent about Granada (The Art of War in the Western World [Urbana and Chicago, 1987], 165-87); Philippe Contamine said little about Granada (War in the Middle Ages, trans. M. Jones [New York, 1980]); Charles Oman belittled the war with a brief slight (2:431), adding "Guns were not effective except in defensive battles" (2:431) in his History of the Art of War in the Middle Ages, 2 vols. (London, 1924). His view became canon for English-speaking historians after enshrinement in "The Art of War in the Fifteenth Century," The Cambridge Medieval History, vol. 8, (New York and Cambridge, 1936), 646-59; silent too is Michael Howard (War in European History [London, 1974]; Hans Delbrück ignored the conflict (History of the Art of War within the Framework of Political History, trans. W. J. Renfroe, Jr., 4 vols., [Westport, Conn., and London, U.K., 1978-85]); Trevor Dupuy's "Age of Gunpowder" chapter finds no place for Granada despite citing many other examples marking The Evolution of Weapons and Warfare (Fairfax, Va., 1984), 91-110.
- 15. William McNeill, for example, managed almost single-handedly to rehabilitate the concept of a "fifteenth-century Gunpowder Revolution" without a word about Granada. See *The Pursuit of Power: Technology, Armed Force, and Society since 1000 AD* (Chicago, 1982), 63-102. His new military history monograph continued to avoid the subject (William H. McNeill, *The Age of Gunpowder Empires, 1450-1800*, in *Essays on Global and Comparative History*, ed. Michael Adas [Washington, 1989]).

Duffy, who is typical, gave no thought to the 1481-92 war when he wrote in his fine book, Siege Warfare:

In the fifteenth century gunpowder artillery came to play a regular, but (outside France) only occasionally decisive, part in fortress warfare. If cannons cracked open Harfleur in 1415, Constantinople in 1453, and Krems in 1477, there was still not much evidence to show artillery favored the attack very much more than the defense. 16

"Military Revolution" historians have shown no more interest in Granada. In the late 1970s, Geoffrey Parker, doyen of that school and a historian of Spain to boot, seemed poised for a revisionist attempt. In one reassessment of Michael Roberts's original "Military Revolution" thesis, he wrote:

The reason why the kingdom of Granada fell to the Christians so easily in the 1480s, when it had resisted successfully for seven centuries, lay in the fact that Ferdinand and Isabella were able to bring a train of almost 180 siege-guns against Moorish strongholds.¹⁷

But his purpose here was to argue that European armies experienced explosive change long before 1560, not to challenge thinking about the place of the Granada conflict in that process. Parker never went further into the Reconquista, and his 1988 magnum opus, *The Military Revolution*, spoke of Granada only once. That comment, incidentally, that "Ferdinand and Isabella conquered Granada with no more than 20,000 men," is wrong.¹⁸

Ferdinand's decision to annex Granada broke drastically with a limited war tradition that had evolved in Iberia after the last great Hispano-Maghrib crusade-*jihad* campaigns ended in the 1360s. ¹⁹ Since then, relations between Granada and the Christian kingdoms of Castile, Aragon, and Navarre had aimed at containment rather than elimination

^{16.} C. Duffy, Siege Warfare (New York, 1987), 1.

^{17.} Geoffrey Parker, "The 'Military Revolution'—A Myth?" Journal of Modern History 48 (1976), p. 203 of 195-214; he repeated the same statement later in "Warfare," in The New Cambridge Modern History, ed. Peter Burke, vol. 13 (Cambridge, 1979), 201 of 201-19. Note that in the Journal of Modern History article, Ladero-Quesada is his reference (Castilla, 127).

^{18.} G. Parker, The Military Revolution: Military Innovation and the Rise of the West (Cambridge, 1988), 24; by the end of the Granadan War, most authorities put Castilian forces in the neighborhood of 60,000 (Hillgarth, Spanish Kingdoms, 2:376; Contamine, War in the Middle Ages, 135; Hale, War and Society, 62-63; Ladero-Quesada, Castilla, 159). The ever-increasing number of men in Ferdinand's army argues that Spain experienced a phase of force-size expansion in the war decade that fits Dr. Parker's criteria for revolutionary military growth and adds to his case that such growth began long before Michael Robert's pivotal date of 1560.

^{19.} Hillgarth, Spanish Kingdoms, 2: 127-32.

of a player—"more parade than crusade." ²⁰ After centuries of intense interaction, Hispano-Maghrib combat had developed a kind of predictability reflected in a commonality of tactics, arms, vocabulary, and even recruitment shared by Spaniard, Portuguese, and Arab. ²¹ Offensives became seasonal cavalry raids over porous frontier borders, the low-level enterprise of raid, ravage, and plunder known in Castilian and Arabic as tala (from Arabic, talī ca). ²² Usually, local landed nobles conducted these strikes, not crowns at distant capitals. Major campaigns forced rulers to tax, to conscript, and to bargain with hidalgo or shaykh nobles, towns, and other institutions eager to brake the absolutist pretensions of kings and amirs. Fifteenth century Hispano-Granadan warfare thus remained remarkably restrained in military (and economic) assets risked, social mobilization attempted, and territory exchanged—until King Ferdinand gradually turned a 1481 border incident into total war.

The massive employment of cannons to conquer Granada represented just as sharp and no less revolutionary a break with the timid deployments of artillery in previous fifteenth-century battles. The Hispano-Maghrib had been one of several late medieval laboratories for experiments in powder weapons and tactics, and some writers think firearms were virtually invented in Spain.²³ Yet artillery played an inconclusive role in the Iberian theatre of the Hundred Years' War (1370–1410), a severe contrast to its importance in France and Hussite Bohemia. The Antequerra War (1406–10) between Castile and Granada led to sieges

20. Ibid., 2:60.

21. Muslim and even Jewish warriors served Christian kings in Navarre, Castile, and Aragon while Christian mercenary units and technicians enlisted in Granadan and Maghribi armies. Hillgarth, Spanish Kingdoms, 2: 128, 201-3; Harvey, Islamic Spain, 138-45; Elana Lourie, "Anatomy of Ambivalence: Muslims under the Crown of Aragon in the Late Thirteenth Century," in Crusades and Colonization (Brookfield, Vt.: Valorum Collected Studies Series, 1990), Chapter VII, and "A Jewish Mercenary in the Service of the King of Aragon," Chapter VIII; Mercedes Garcia-Arenal and B. Leroy, Moros y Judios en Navarra en la baja edad media (Madrid, 1984), 22-33, 56-59, 72-92. For Christians in Muslim armies, see Charles E. Dufoureq, L'Espagne catalane et le Maghrib aux 13e et 14e siècles (Paris, 1966).

22. The best primary sources on late-medieval Hispano-Maghrib warfare from the Muslim side are two treatises by Ali ibn Hudhayl (d. ca. 1405). These are Taḥfat al-Anfus wa Shaʿār Sukkān al-Andalus, trans. by Louis Mercer as L'Ornement des ames et la devise des habitants de l'Andalousie (Paris, 1924) and Ḥilyat al-Fursān wa Shiʿār ash-Shujʿān, trans. by L. Mercer as La Parure des cavaliers et l'insigne des preux (Paris, 1939). He says nothing of firearms and cannons.

23. The latest salvo in this debate is A. al-Hassan and D. Hill's *Islamic Technology* (Cambridge, 1986), 106-20.

in which artillery appeared in both armies but, except for being present and noisy, guns performed without distinction.²⁴

In the 1431-46 period, Castilian forces again cut slices out of the Granadan frontier, but then lost almost all these gains to the resourceful Muhammad IX. Enrique IV of Castile waged war on Muhammad's successor, Amir Sacd, from 1455 to 1457 only to win some minor frontier adjustments. Sa'd's defense benefitted not only from his own martial skill but from tacit help from Navarre, Aragon, and Italy.²⁵ In all these campaigns, artillery rarely appeared. Castile did permanently wrest Gibraltar from the Amirate in 1462, but cannons played no serious part in what was Granada's only territorial loss since the century began.²⁶ This furious inertia on the Castilian-Granada borders contrasted sharply with Portuguese military innovations in which amphibious assault tactics, based on gunpowder firepower, had put most of the Moroccan coast under Lisbon's domination by 1472.27 Thus, while firearms set off upheaval and historic change in the North Atlantic, Eastern Europe, and the Balkans, the fifteenth-century "Gunpowder Revolution" had yet to alter the balance of forces between Christian and Muslim Spaniards.

Cannons made their first real significant appearance in Iberian land warfare during the 1474-79 Castilian civil war. In this volcanic little brawl for the future of a still-divided Spain, Isabel of Castile and Ferdinand of Aragon fought rebellious Castilian nobles, towns, and a Portuguese invasion aimed at deposing Isabel for a queen married into Lisbon's ruling house.²⁸ In several key battles, notably Ferdinand's victories at Burgos and Toro, field gun firings opened the combat and featured in the first stages of siege against border towns that dared defy

- 24. Ladero-Quesada, Granada, 104-5; Arié, L'Espagne Musulmane, 129-40; Alvaro Garcia de Santa Maria did give artillery credit for bringing Zahara (1407) down in a week. See his Crónica de Don Juan II de Castilla (Madrid, 1891), 291-92.
 - 25. Ladero-Quesada, Granada, 105-18.
- 26. Mosín Diego de Valera, Memorial de Deversos Hazañas, ed. M. Rivadeneyra, Biblioteca de Autores Españolas, vol. 70 (Madrid, 1878), 26-28 of 3-95; Hechos del Condestable Don Miguel Lucas de Iranzo, ed. de la Mata Carriazo, in Colección de Crónicas Españolas, vol. 4 (Madrid, 1940), 74-77; Bernáldez, Memorias, 1: 11-16; Harvey, Islamic Spain, 138-50, 256-57.
- 27. John Vogt, "Saint Barbara's Legions: Portuguese Artillery in the Struggle for Morocco," *Military Affairs* 41 (December 1977), 176-82. The 1471 capture of Arzila and Tangiers by Portuguese seaborne assaults relied heavily on cannon fire. Castilians, Lisbon's rivals for the Maghrib trade, found these attacks ferocious (Bernáldez, *Memorias*, 17-35; Valera, *Memorial*, 30-31).
- 28. The 1474-79 Castilian-Portuguese War mirrored in some ways the Franco-Burgundian struggle going on at the same time, but the part played by artillery in the French war has long received far more scholarly attention. See Luis Suárez Fernández, "La Guerra de Sucesión," *Historia de España*, vol. 17 (Madrid, 1969), 81-334; Hillgarth, *Spanish Kingdoms*, 2:354-65.

him.²⁹ Nonetheless, firearms and cannons did not carry the day in any of the major sieges or field battles despite increased presence. Indeed the war seemed to point up Iberian backwardness. By the peace of 1479, Castile's army staffed only four *lombarderos* or master gunners—a number that exploded to ninety-one by 1485.³⁰ The 1470s thus saw a kind of revival of guns in Iberia warfare, but their numbers were few, the tactics cautious, and their performance inconclusive.

What kind of force accomplished in ten years a military goal which had eluded Iberian Christians for two hundred and fifty? The final success of Ferdinand's Reconquista army, argued Ladero-Quesada, derived from three factors new to Hispano-Maghrib war styles—the great size of the "standing" force (60,000 men), the primacy of infantry force and tactics, and the reliance on artillery in campaigns of methodic sieges instead of lightning raids.³¹ However, artillery stimulated factors that made gunnery more than one coequal element in a balanced strategic tripod. The influence of guns on the growth of infantry force was crucial. Guns could protect highly vulnerable encampments from sudden attacks by Granada guerrilla forces, making winter campaigning safer and thus worth the greater risks involved in keeping soldiers in the field far longer.³² Al-Maqqarī noted the shock in Granada's capital at the unforeseen endurance of Spain's encirclement in 1491.33 But it took foot soldiers, not horsemen, to secure and serve the cannons, thus further elbowing the cavalry aside.34 Castilians and Granadans were mutual heirs in a long legacy of medieval siegecraft, and both knew the technical basics of producing and firing guns. What neither possessed at first, but Castile developed, was a strategy that moved firepower

^{29.} Pulgar, Crónica, 1:120-146, 184-87, 212-15, 241-47; Valera, Crónica, 36, 39, 42-103; Valera, Memorial, 32-84; Palencia, Narrato Belli Adversus Granatenses, 15-20, 34-43, 55-88; Bernáldez, Memorias, 47-77, 80-82, 90-91, 120-23, 152-63, 148-89; Vigón, Artillería, 1:91-93.

^{30.} Hillgarth, Spanish Kingdoms, 2:377. Bernáldez claimed that ribadoquines, a type of light cannon found on most European battlefields since 1410, first appeared in Castilian land war only in 1475 (Memorias, 51).

^{31.} Ladero-Quesada, Castilla, 12, 159; Milicia, 39-40; Pulgar, Crónica, 2:40, 72-73, 108-10, 146, 203-4, 212-14, 258-61, 335-36.

^{32.} Palacia, Guerra, 104; Pulgar, Crónica, 2:408-9; Bernáldez, Memorias, 640-41.

^{33. &}quot;[The townsmen in 1491] thought and expected, with winter approaching, the Christians would raise the siege and retire to their country. Our hopes were dashed. They built a town in front of our city and pressed the siege closer than ever (al-Maqqarī, Nafh at-Tīb, 4:524-25)."

^{34.} As yet, neither the *espingard* nor its shorter, lighter competitor, the arquebuse, could be fired effectively from horseback, thereby restricting cavalry to pre-gunpowder roles that the new warfare style was making increasingly hazardous.

weapons from a decorative supporting role to operational center stage and then sustained this strategy beyond a single campaign.

Cannon fire shortened sieges which sped up the pace of conquest, a change not possible with just more infantry and cavalry. Guns ground down strongholds which had outlasted all previous assaults.35 Spanish artillery became more specialized as guns became more numerous.³⁶ While great lombardas and pederosas battered the walls, medium guns like the pasabolante and cañon medio raked repair crews and gates. Cannons still had to be dragged or carted, a slow process in which the risk of ambush haunted the ponderous movement at every defile and ravine.³⁷ Against coastal towns, special ships accelerated movement of the guns and served as firing platforms. Afield, smaller guns like the falconete, the verso, and older ribadoquines assumed antipersonnel missions against forays by townsmen and rustics. Along with espingard handguns, the mobility of these light pieces made them ideal to protect the long supply trains needed to drag the wall-smashers and their support gear over ambush-infested trails.38 Thus, artillery proved central in every territorial acquisition up to the final years.

Given the relative underdevelopment of his own artillery resources, Ferdinand sought foreign advisors for an infusion of instant expertise. The first commander of Castilian guns had been French, France having patronized gunnery on the peninsula since the Hundred Years' War. In 1489, Ferdinand organized his artillery into a distinct standing corps.³⁹ The Master of Artillery (mariscal) was elevated to the Casa Real (palace household) and given a staff. Despite Crown demands for uniformity, the size of a gun crew and the number of guns in a unit were not fixed. Each gun, once placed, was fired by a cañonero or lombardero as gunner with a crew chief, assistant firers (tiradores and an ayudante),

^{35.} The unearthing of thousands of projectiles at Moclin in 1956 gives some idea of the fire defenders faced and Spaniards fired in 1486. See Gámir-Sandova, "Reliquias de las defensas fronterizas de Granada y Castilla en los siglos XIV y XV" Miscelanea de estudios árabes y hebraicos 4 (1956): 60-61.

^{36.} In the first years of the war, chroniclers spoke only of cañones or artilleria. In later years, they started to differentiate bombardas, lombardas, culebrinas, ribadoquines, falconetes, pasobolantes, cerbatanas, versos, and many others by types, size, calibre, and function. Pulgar, Crónica, 2:291-92; Jorge Vigón, El Ejército de los Reyes Católicos (Madrid, 1968), 226-36.

^{37.} On mobility problems, see Ladero-Quesada, Castilla, 165-75; Pulgar gives many anecdotes (Crónica, 2: 148-50, 166, 199, 252, 261, 292, 324-25).

^{38.} Valera credits firearms with repulsing ambush after ambush as Spaniards built up forces around Málaga even during night fighting (Crónica, 228-31).

^{39.} Vigón, Artillería, 1:74; commanders of an artillery captancia required practical experience with guns and also engineering skills (Pulgar, Crónica, 2:127, 149-50, 199, 214, 228, 262-64).

and common crewmen (gastadores) who lifted, loaded, and dug.⁴⁰ Finally, by the end of the Granadan War, Spain had produced a generation of new military thinkers like Diego de Salazar and Gonzalo de Ayora. Less heralded than Machiavelli, these men understood firearms warfare far better than the more famous Machiavelli. They had learned their lessons in Granada.

As with commanders and crewmen, the monarchs had to hire French, German, and Italian casters to overcome a lack of indigenous artillery forgers. 41 Aragon possessed a small, robust base for manufacture of gunpowder, small arms, cannon barrels, and stores, but the domestic industry of the Union had no surge capacity to meet the voracious demands of conquest war. After the Moors broke his first 1482 siege at Loja (Ar. Lawsha), the King set up a cannonball and powder works in the Constantine mountains with arsenals at Seville, Córdoba, and Ecija. 42 Even then, production capability on Iberian soil fell so consistently short that Spain turned regularly to foreign suppliers when combat drained stocks to crisis levels. 43 Ferdinand's failure to attain selfsufficiency foreshadowed Spain's permanent dependency on foreign industry, a vulnerability that, whatever its world-power status in the sixteenth-century Military Revolution, Spain never escaped. 44 But, dependent or not, these arms support relationships fed the army's needs. Spain's cannons stayed current with the latest French and Flemish innovations while maintaining a modest and varied indigenous production capability.⁴⁵ When the war ended, the Catholic Monarchs owned over 180 large and medium pieces, five state-run foundries (many on Granadan soil), and the largest standing army in the West.

For all this, the parade that marched into prostrate Granada in January 1492, embodied the awkward jumble of modern and medieval in Castile's army. The core was the King's own permanent bodyguard, the Casa Real, about 5,000 men at most. For numbers, Ferdinand still needed the quasi-feudal host (hueste), a precarious mosaic knit from

- 40. Vigón, Artillería, 1:58, 72, 116-26.
- 41. Artillerymen, arquebusiers, and crossbowmen from as far away as England brought their services and taught their skills. Bernáldez, *Memorias*, 167; Vigón, *Artillería*, 1:53, 73, 111.
 - 42. Bernáldez, Memorias, 125; Ladero-Quesada, Castilla, 124-25.
- 43. Besieging Málaga in 1487, Ferdinand's need for powder compelled him not only to draw down stores at Valencia and Barcelona but to appeal to Naples and Portugal for powder and weapons (Pulgar, Crónica, 2: 291-92, 301). He also turned to the Holy Roman Emperor, Maximilian, who sent him some Flemish guns (Valera, Crónica, 2: 226; Bernáldez, Memorias, 172; Ladero-Quesada, Castilla, 144-46).
- 44. I. A. A. Thompson, War and Government in Hapsburg Spain (London, 1976), 22-26, 44, 234-56 especially 236.
- 45. Vigón, Artillería, 1:32, 53-54, 58, 74, 101, 254, 308, 310, and 320; El Ejército, 241-51; Ladero-Quesada, Castilla, 123-28.

private armies of march lord Grandees, *Hermandad* militias, town councils, and a galaxy of mercenaries, technicians, and adventurers. ⁴⁶ Jealous of their military autonomy, many of these allies balked at being dissolved into the set 800-man command units around which the royal army organized for combat. An extremely flexible system for maneuver, command control, and resupply, the *captancia* was a prelude to the famous pike-and-musket *tercio* formation of the next century. But to various *hueste* components mobilized for the latest campaign season, the *captancia* was just one more of Ferdinand's unceasing ploys to subvert and dominate the institutions that protected their social orders from his absolutist ambitions. This army had to be reassembled each year and held together by appeals, threats, honors, cash, and sometimes duress.

As befit their regal posturings, the Monarchs declared cannon a Crown monopoly, forbidden to all other subjects. Such declarations proved stillborn.⁴⁷ Nothing mocked these pretenses more than regular Royal appeals to "borrow" cannons from feudal Grandees, supposedly vassals.⁴⁸ Laws against private ownership and unlicensed manufacture or sale appeared yearly to general indifference.⁴⁹ Cities stocked their own firearms arsenals and sneered at state orders to give them up and rely on royal protection. ("We grow our own oranges" said a town councilman, making a wicked pun on local slang for cannonballs.) Noble, urban, and other orders readily withheld military assets to wring concessions as a price of cooperation—even against "los moros." Nobles regarded their obstructive tactics as neither reactionary nor unpatriotic.⁵⁰ The nobility's power to force the crown to respect their vested interests directly affected royal military strategy, including the pivotal decision

- 46. The crown's new standing force of men-at-arms added some gunners, fusiliers, and technical specialists (Ladero-Quesada, Castilla, 105-46 and charts 228-82). The private forces of every Grandee were miniature versions of this army (Milicia, 41-43, 101-7). Grandees refer to fifteen very specific families whose army resources made them leaders of the noble orders. Their force contributions averaged fifteen to twenty percent of the army, giving them considerable leverage over the Catholic Monarchs.
 - 47. Hillgarth, Spanish Kingdoms, 2:387.
- 48. Vigón, Artillería, 1:52-79, 111; Ladero-Quesada, Milicia, 20. On his own, the powerful Duke of Medina-Sidonia sent his gunboats against Granadan ships trying to raise the blockade of Málaga (Pulgar, Crónica, 2:321-22).
- 49. In 1510, King Ferdinand came as close as he dared to disarming society by law. He forced legislation through the *cortes* of both Castile and Aragon requiring all arms-owning commoners to register and license their weapons. These laws remained generally unenforceable and unenforced.
- 50. E. Lourie, "A Society Organized for War: Medieval Spain," Past and Present 25 (1966): 72-75; L. S. Fernandez, "The Kingdom of Castile in the Fifteenth Century," ed. Roger Highfield, Spain in the Fifteenth Century (New York, 1980), 81-113; Hillgarth, Spanish Kingdoms, 2: 484-532.

that the 1484 campaigns would invest in artillery sieges to annex towns instead of the ravaging and looting forays favored by the Grandees.⁵¹ If Granada's Amir was bedeviled by fractious landed nobles and townsmen, Isabel and Ferdinand, too, faced disruptive internal "disloyalty."

Like the first army of the united monarchy of Spain, the last Granadan army was a stew of medieval and early modern elements. 52 In fact, besides obvious distinctions of religion, numerical strength, and artillery operations, Granada's army resembled Castile's in many ways. In organizational form, it too was a Hispano-Maghribi army, grouped by territorial contingents and supervised by a proto-national bureaucracy (the diwan al-jaysh or Council of the Army). At the capital of the makhzan (central government), the Amir commanded a main force of 4,000 to 7,000 horsemen and a standing infantry of 10,000.53 Three makhzan provincial garrisons stood in Ronda (Ar. Rūnda), Malaga (Ar. Mālah), and Gaudix (Ar. Wādī 'Āsh), cities designated as regional commands (shiya khāssa) under a royal $q\bar{a}$ 'id. These included units of Christian hirelings and European converts, the ubiquitous renegados whom birthright Muslims called murtaddin.54 Other provinces had a jund (army) of a thousand men under a rats, units that could expand rapidly when a crisis rallied local guilds, town ramāt (quasi-militia clubs devoted to crossbow or arquebuse marksmanship), murābit guardians (warrior religious fraternities), and other reserves. There were also mercenaries, recruited as units like the Moroccan ghumāra tribesmen (some ghumāra carried firearms and used them to ambush Ferdinand's forces in the hills around Ronda).55 The best formed cavalry units called ghuzāt under the shaykh al-ghuzāt al-maghāriba ("Chief of the Maghribi Warriors"). Invoking the cultural unity of the Hispano-Maghrib, Amirs often engaged the military services of princely sons from other North African royal houses.⁵⁶

In Granada as much of Castile, actual power belonged to provincial noble families like Ibn al-Sarrāj (Abencerrajes), Bānū Ashqīlūla, Mufarrīj,

- 51. Pulgar, Crónica, 120-23; Palencia, Guerra, 2:121-22.
- 52. Granada's army has received little study. Overviews are Arié, L'Espagne Musulmane, 229-96, and Ladero-Quesada, Granada, 63-67.
- 53. Hernando de Baeza, Las Cosas, 17-18; Anonymous Castilian, "La Historia," 45.
- 54. Nubdhat, A: 31-32, 34, 45, S: 36-38, 39. Like 'uljī, murtaddin meant convert but carried the disdainful tone of "riff-raff," "low-lifes," "hireling," or even "renegade."
- 55. G. Yver, "Ghumāra," Encyclopedia of Islam, 2d ed. (Leiden, 1965), 2: 1095-96. Moroccan mercenaries surfaced at the siege of Coyn in 1485 (Pulgar, Crónica, 2: 156).
- 56. One was Aḥmad at-Taghrī, a commander at Málaga (Ladero-Quesada, Granada, 57). He typified the Muslim mujāhiddin who rallied to defend embattled Spanish Islam just as European crusaders served the cause of the Cross in Castile.

and Ibn Abd al-Barr. Shaykhs in these clans were simultaneously governors, rural landlords, magistrates, commanders, contractors, and tribal leaders. Their tribes held fortified towns, levied taxes, and raised armies independent from the Amir's state and army, entitling them to the privileged honorific of being jaysh clans. Such a designation was more recognition of political reality than a symbol of the Amir's authority, since these tribes often defied the capital, even making alliances with local Christian towns and nobles.⁵⁷ In shaykh courts as at the Alhambra palace of Granada, Maghribi volunteers, princes, mercenary veterans, and vast numbers of patriotic individuals, filled the ranks, staff, and command at every level. Every city had a militia and ramāt, rural areas relied on murābit shaykhs, village headmen, and gentry. At Alhama (Ar. al-Hāma) in 1482, the Marqués of Cádiz met as much resistance from the firearms and crossbows of the ramāt as the makhzan garrison.58 Thus, the first and second lines of Granadan national security stood upon deep-set traditions of communal military autonomy and local self-defence. As politically untidy as such systems may have been to the orderly minded commanders and bureaucrats of the makhzan, they had kept Granada free since 1253.

Estimates of field and garrison strengths for Granada vary throughout primary chronicles. The Anonymous Granadan mentions an Arad al-Jayūsh (an official parade to review the troops) conducted in 1478.59 Unfortunately, while he tells us this exercise took days to complete, he gives no figures for firearms and artillery if he saw them. Amir Abū'l-Hasan mustered from 3,000 to 4,000 light cavalry jinetes, 50,000 or more infantry, and "una grossa lombarda" in his 1482 attempt to wrest Alhama from the Marqués of Cádiz. 60 By November, when late harvests and the end of the traditional Iberian campaign season beckoned Muslim mujāhid volunteers away, the amirate mustered less than 7,000 to attack Lucena (Ar. Lussana). Pulgar assessed the garrison at Loja that same year to be 3,000 regulars; Valera doubled the estimate.61 Málaga, as a shiya khāṣṣa garrison, kept 9,000 makhzani troops within its walls.62 As late as 1486, Málaga's amir, Muhammad az-Zaghal, could round up almost 60,000 men to defend the central plains from marauders unleashed after Ferdinand's guns destroyed frontline strongholds.63

- 57. Ladero-Quesada, Granada, 57-61; Arié, L'Espagne Musulmane, 137-41.
- 58. Pulgar, Crónica, 7-10.
- 59. Nubdhat, A: 304, S: 4-5; al-Maqqarī, Nash at-Tīb, 4: 511.
- 60. Bernáldez, Memorias, 119; Valera, Crónica, 137-49.
- 61. Pulgar, Crónica, 2:26-29; Valera, Crónica, 160.
- 62. Valera, Crónica, 223-25, 236-43.
- 63. Palencia, Guerra, 168-69.

Foreigners and firearms appeared together at the command-elite level in the Granadan army, just as in Castile. Reports of "renegadoes, conversos, y apostates" marked the presence of makhzani professional troops. Noting that these men policed and punished defeatism among the townsmen with chilling rigor, Palencia attributed such conduct to cowardice, desperation, and natural barbarism.64 (When Abū Abdullāh's partisans rioted in the al-Bayyazīn quarter of Granada in 1486, Muhammad az-Zaghal's garrison turned the cannons and catapults of the qaşba against them.65) Yet, such police duties differed not at all from the bullying role often played by Hermandad men in Spanish frontier towns. These special units of Maghribis and Europeans reminded observers that Granadan towns received some direction and reinforcement from the Amir's jaysh. Though often split between two or three factions, the amirate command structure retained a certain national scope and cohesion that transcended personal loyalties to the Amir or his latest rival. Granadan traditions of urban self-defence did not stand solely on a heroic city-state autonomy, but on surviving the early siege until the center gathered strength for a rescue.

Granadans had cannons and firearms, but their chronicles say little about them, meaning their tactics must be teased out from hostile European sources. Despite inferiority in numbers and expertise, Granadans tried to meet Spanish firepower with their own artillery and hand-guns from the beginning.66 Even before 1481, a cannon or two protected the main gate of nearly every state-manned stronghold (hisn), fortified town (madinah) or village (qasr), and warrior fraternity bastion (ribāt) in the Amir's realm. Thus, Granadan guns served primarily as adjuncts to urban defenses, but resourceful Moors also found original ways to deploy scarce gunpowder assets. Granadans experimented with dragoons, espingarderos who rode to their position on horseback and dismounted to fight.⁶⁷ Palencia, no romanticizer of "los moros," praised the skill of Muslim espingarderos at Vélez-Málaga and elsewhere. 68 Reconquistadors ran into a hail of fire at Ronda, Moclin, and even salvos at Baza where Granadans used portable swivel guns to fire shot, nails, and crude shrapnel at exposed troops.⁶⁹ Valera and

^{64. &}quot;[The viciousness of Málaga's defense arose] from the renegades, African and Berber savages serving the wali ... gomares, apostates from Seville and all Andalus, conversos, and criminals." (Ibid., 183-84).

^{65.} Nubdhat, A: 16-17, S: 19-20.

^{66.} Bernáldez, *Memorias*, 119-20; Valera, *Crónica*, 138, 149; Pulgar, *Crónica*, 2: 2-8, 166, 291.

^{67.} Pulgar, Crónica, 2:30, 75, 77, 121; Bernáldez, Memorias, 122.

^{68.} Palencia, Guerra, 180, 234.

^{69.} Ibid., 232; Vigón, El Ejército, 226. The swivel cannon, which could be carried by three men and rapidly set up to fire, originally was a naval gun used for

Muentzer found Málaga's volume of fire daunting, a cruel mix of cross-bows, espingards, ribadoquines, and bombards. 70 However, while the invaders respected Moorish artillery, Spain's comparative advantages in numbers of weapons, support resources, and in aggressive field tactics made a gigantic difference against an enemy with far fewer weapons used mostly for static defense.

Moreover, Granada's manufacturing base for construction and repair of gunpowder weapons was embryonic, if not nonexistent. Lamentably, the sole source of Granadan firepower materials known during the war was neither industries nor imports, but the luck of capture. 71 Muslims in Navarre, a Spanish Christian kingdom in the Pyrenees, had experience in manufacturing weaponry, but no solid connection between them and Granada has yet come to light. 72 Indirect evidence suggests that Granadan gun and powder works may have existed at Baza, Ronda, and Málaga.⁷³ Earlier, the Amirate had obtained weapons from Christian sources, mainly Genoa, Venice, and other Italian patrons, but Aragon's 1484 naval blockade shut these contraband networks down.⁷⁴ Distance prevented an Ottoman response, and the battered Sultanates of North Africa were more technologically impoverished than the Amirate. Even had the blockade been less effective, Granada's navy lacked the seagoing firepower to puncture it. Islamic Spain thus faced an enemy superior not only in artillery pieces and tactics, but in gunpowder sustainment resources.

Wed to traditions of static urban defense and horse-borne war, Granada lacked the technological depth and martial cohesion to carry the war far into Castile. The conservatism of Amirate strategy arose not from mental stupor, but from centuries of successful experience defending a land naturally designed for resistance. Nor, for the record, were Granadans bereft of cannons, firearms, and tactical experience in their use. The vital distinction lay in Castile's bold adoption of mobile offensive

close quarter combat to rip sails, ropes, and enemy sailors. Known as the versos in Castile, the bercos in Portugal, and al-buzanus in Morocco-Granada, this nasty little weapon came into its own in land warfare during the conquest of Granada.

^{70.} Valera, Crónica, 240, 246-50, 253, 255, 257, 260; Joachim Muentzer, Viaje por España y Portugal, trans. Julio Puyal, Boletin de la Real Academia de la Historia 84 (1924): 78-96.

^{71.} Nubdhat refers to al anfāṭ (Arabic, 9 and n. 1) trans. as cañones (Spanish, 12); Valera, Crónica, 150-60.

^{72.} Harvey, Islamic Spain, 144-45.

^{73.} Ferdinand had producing foundries in these cities a year after capture. Málaga eventually eclipsed all others (Vigón, Artillería, 53-60, 101-3; Thompson, War and Government in Hapsburg Spain, 234-36).

^{74.} Ladero-Quesada, Granada, 42-48; Palencia noted Franco-Portuguese cooperation with Granada in the 1470s (Guerra, 64-88, 126).

operations based on gunpowder firearms and bulky artillery. Tactically, this investment was an expensive, high-risk commitment against an enemy whose strength lay in interlocking fortifications planted in rugged terrain, hit-and-run guerrilla cavalry tactics, and a people's militia infantry organized around a small corps of state-paid professionals fighting on interior lines. If Castile and Aragon started with superiority in men, money, and material, centuries of brilliantly fought attrition warfare gave Granadans a dreadful genius at overcoming these strengths. What this heritage did not prepare them for was the artillery onslaught that proved their undoing.

As the following narrative illustrates, the decisive Castilian advantage was an unprecedented employment of massed artillery in campaigns of mobile siege warfare. Like that of Ladero-Quesada, this study structures the war in three phases, each defined by escalating transitions from traditional tala warfare to methodical annexation of territory and peoples. However, while Ladero-Quesada's analysis divided his stages into origins (1481–84), decisive war (1485–87), and conclusion (1488– 91), an analysis which insists on the primacy of artillery operations must reconfigure his schemata. Our reordering proposes a shortened period of traditional-style warfare in (1481-83), melding into a prolonged sequence of annual siege campaigns extending through the exhaustive Battle for Baza (1483-89). Only after January 1490, does a new phase emerge when Ferdinand shifted (for resource conservation and diplomatics) from a strategy of pounding assaults to the passive approach of a starvation encirclement. Even then, the final reduction of the Granadan heartland (1490-91) was itself a combination of duress and diplomacy made possible by the unbroken series of previous cannon conquests.

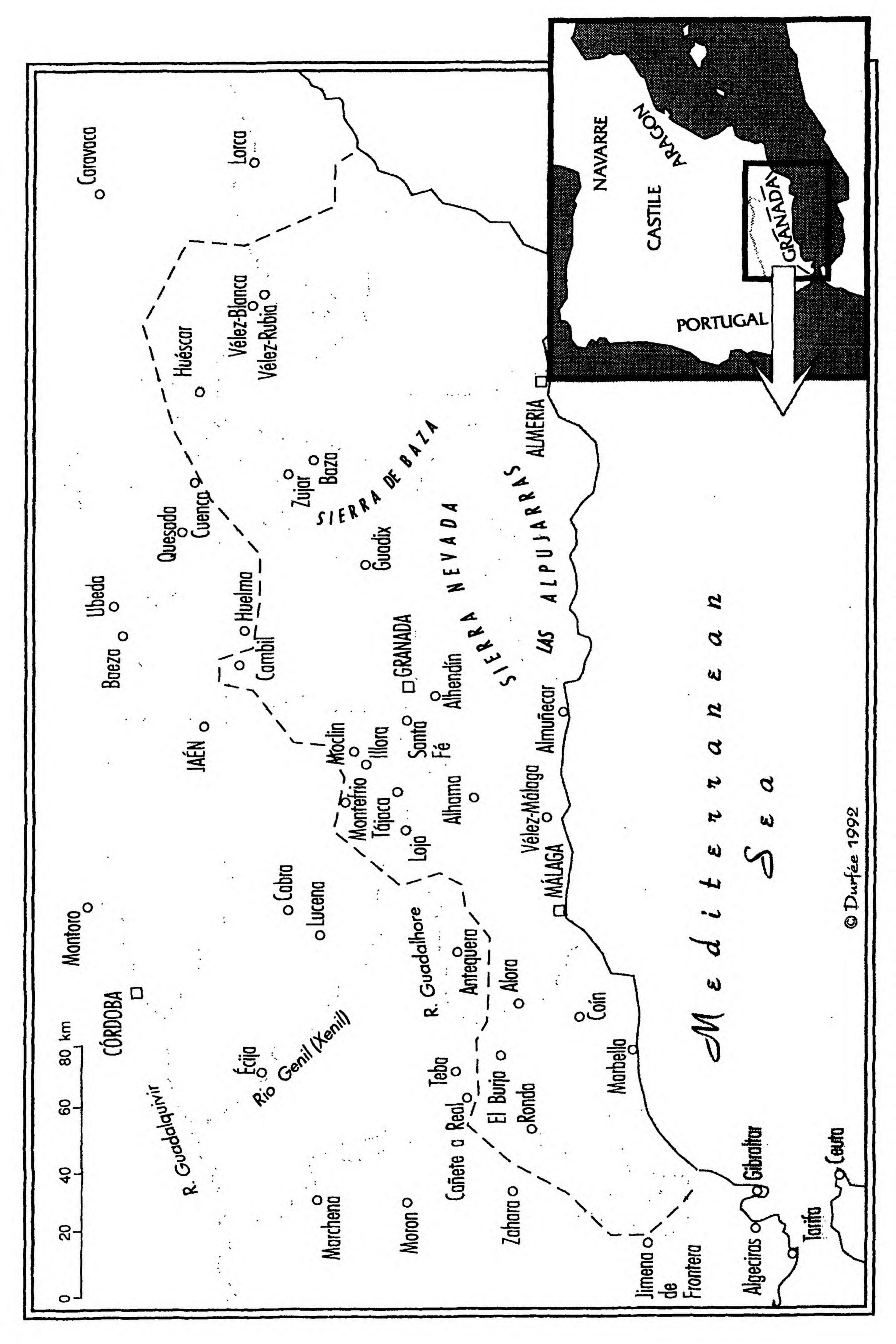
The opening of the conflict in the last month of 1481 gave no hint of massive operations to come. Preoccupied with separate domestic tumults of their own, the Catholic Monarchs and the Amir had kept a series of truces between their crowns since 1475. The squabbles of Amir Abū 1-Ḥasan, his son Abū Abdallāh (Boabdil), and certain Muslim borderlords were no more or less inviting than previous internal disturbances Castile chose to ignore throughout the century. Besides, after several years strife against Portugal, France, and several powerful noble houses, the United Monarchy of Ferdinand and Isabel seemed too frail to test its uncertain stamina in still another major conflict. With nearly 300,000 Muslim subjects, a large mounted force, "and more artillery and everything else needed for war than had any of the other kings of Granada in times past," Granada in 1481 appeared a most

75. Al-Maqqarī believed the Amirs put too much faith in the security provided them by Christian "civil wars" (Nafh at-Tīb, 4:511-12). But nearly four decades of such tumult in Christian Iberia argue that Granadans had more logic on their side than a seventeenth-century Algerian "blinded by hindsight" might have recognized.

uninviting victim.⁷⁶ Both King and Amir recognized with discreet silence that neither had the internal force to compel march lords along their borders to obey the truce, but kept up the pretenses of being at peace even as Grandees like the Marqués of Cádiz or Granada's Banū Sarrāj continued the vicious "free" enterprise of border raiding and ransoming. The first campaigns were thus glorified frontier raids and, even when backed by growing numbers of royal troops, retained the hesitant, probing quality typical of such operations.

During Christmas week 1481, a local qā'id crossed into Castile and occupied the garrison town of Zahara, scaling the walls at night in a quasi-guerrilla raid.⁷⁷ In retaliation, the Marqués of Cádiz, with 6,000 men and some Muslim vassals, plunged deep into Granada's heartland to catch the town of Alhama by surprise in February. Amir Abū l-Hasan, whose main force was already far afield, failed to dislodge this troop with a half-hearted response, although townsfolk put up a spirited resistance. 78 Perhaps taken aback by the Marqués's boldness, Abū Abdullāh had raised the flag of revolt at the capital city again, a tactic of cautious attrition seemed wisest to old Abū l-Hasan. 79 King Ferdinand then grandly resolved to aid the Marqués, if only because royal inaction might suggest weakness to other nobles too soon after the mid-1470s insurrection.⁸⁰ To secure supply lines between Alhama and Castilian Andalucia, the King tried to take the city of Loja, but failed with heavy losses, including some cannons.81 The Marqués, however, proved quite self-sufficient, having brought some light cannons from his private stores. Cádiz promptly set them up overlooking Alhama's streets to insure that his Muslim subjects cooperated with the occupation.⁸² Abū

- 76. The quote is Pulgar, Crónica, 2:5; population figures are from Ladero-Quesada, Granada, 30-36.
- 77. Pulgar, Crónica, 2:3-6. As reprisals went, the seizure of Zahara was no harsher than the Muslim sack of Ceiza in 1478 or the Marqués of Cádiz's short occupations of Garciago (1477) and Montecorto in Rūnda province (1479). See Carriazo, "Historia de la Guerra de Granada," 417-31.
- 78. Pulgar, Crónica, 2: 6-13; Mártir, DIHE, 9: 51-54; the Anonymous Granadan grumped that the Amir arrived in time to prevent the Christians from leaving but without sufficient forces to defeat them (Nubdhat, A: 6-7, 14; S: 8-11).
 - 79. Al-Maqqarī, Nash at-Tīb, 4:512-14.
- 80. To aid his old rival, Cádiz, the Duke of Sidonia mustered 5,000 cavalry and 40,000 foot (Pulgar, Crónica, 2:20-24). He also possessed his own "artillería y maquiñas de guerra" (Valera, Crónica, 137-49; Bernáldez, Memorias, 114-17; Palencia, Guerra, 90-95).
- 81. Pulgar, Crónica, 2: 29-39; Bernáldez, Memorias, 123-25; Valera, Crónica, 150-68; Palencia, Narrato Belli Adversus Granatenses, 94-97; al-Maqqarī, Nafḥ aṭ-Ṭīb, 4: 514; Nubdhat, A: 9, S: 11-12. (The Anonymous Granadan used anfāṭ for cannons; al-Maqqarī used al-madāfac)
 - 82. Palencia, Guerra, 2:95.



nquest of Granada. Border shown as of 1482. (Drawn by Albert "Durf" McJoy

l-Ḥasan hit back at Alhama, and mocked Ferdinand with a massive raid into south Castile, plundering the Tarifa region.⁸³ By comparison, Ferdinand seemed virtually immobilized by Loja. This pattern of raid and counter-raid continued on into early 1483.

1483 began badly for both sides. The Master of the Order of Santiago led a grand Castilian host through the center of the Amirate, hoping to split the state in two. Muhammad az-Zaghal, brother of the Amir, ran the Christians through a gauntlet of ambushes and finally routed them in battle near Málaga.84 The defeat of a second major expedition into Granada, suddenly made newly unified Spain appear vulnerable, but affairs went no better for Granada. Muhammad az-Zaghal's reprisal invasion in April was soundly beaten.85 The rebellious Abū Abdullāh tried his hand against the border stronghold of Lucena, but Lucena's bombards, bowmen, and gunmen repulsed him with heavy losses and Abū Abdullāh fell prisoner.86 The war, after eighteen months of inconclusive strife, now seemed poised to flicker out into a negotiated exchange like other fifteenth-century flare-ups. The Castilian hold on Alhama was tenuous, capture of Abū Abdullāh had only unified Granadans behind the Amir, and neither side seemed able to strike a decisive blow. The tactics were hardly innovative. Gunpowder weapons had appeared, but only in the risk-free secondary missions typical of early fifteenth century Iberian warfare, defense of fortresses or field camps, and support to infantry forces attempting to scale or breach obstacles. Their performance, as at Loja, did not inspire much confidence.

But then, a successful mid-summer cannon march to the relief of Alhama rejuvenated the war. That July, Ferdinand's armies had experimented with a mode of siege warfare where artillery did not so much support the assault as become the assault. Shying away from major urban and army centers, the first massed cannon deployments tested themselves on hisn blocking the road to Alhama. Reaching Illora, a fortified grain center:

The King ordered the gunners to fire *ribadoquines* at walls and other places where the Moors stood fast. The Moors took such a pounding that they fled in droves. They could not return fire

^{83.} Bernáldez, Memorias, 125-26.

^{84.} Pulgar, Crónica, 2: 61-69; Bernáldez, Memorias, 126-31; Palencia, Guerra, 97-117; Nubdhat, A: 11-12, S: 13-14; al-Maqqarī, Nafh at-Tīb, 4: 514.

^{85.} Al-Maqqarī, Nash at-Tīb, 4:514.

^{86.} Palencia, Guerra, 2: 104-7; Nubdhat, A: 12; Castilian, "La Historia," 45-47; al-Maqqarī, Nafh aṭ-Ṭīb, 4: 515; unknown, "Relación Circunstancia de lo acaedio en la prison del rey chico de Granada, 1483," in Relaciones de los últimos tiempos, 47-67.

from their places for the multitude of espingards, arrows, and other firearms shooting at them.⁸⁷

Not wishing to deplete his forces by occupying Illora, Ferdinand preceded to hisn Tajara (Ar. Tājara).88 Initially, his forces came under heavy fire from the defenders, notably espingarderos. (Don Enrique, the Majordomo, caught a bullet in the leg.) In response, the King brought his own guns to bear, swept the battlements of defenders, and wrecked their single main gun. Enervated by four days of constant barrage, Tajara offered to surrender on honors of war terms before a single enemy soldier had tested its walls.89 The King and his commanders, however, had won more than a secure supply artery. They now acquired a first-hand appreciation for the value of concentrated artillery firepower. It is at Illora and Tajara in 1483, not Alora and Setenil in 1484, that the decisive phase of the war truly opens.

In the spring of 1484, Ferdinand and Isabel took the war further in this new direction by planning the annual campaign as an artillery conquest of border strongholds on Granada's western flank.⁹⁰ They chose Alora, a key bastion controlled by the central garrison at Ronda, as their first target.⁹¹

[The King] set up all his artillery in three days. Immediately, the horrific firing of the bombardas tore up parts of the walls, and there arose the most extraordinary clamor, howls and laments from the women, the weeping of children, raising the panic of defenders already overwhelmed with other fears.⁹²

The Castilians gave Alora a terrible smashing before the $q\bar{a}$ id surrendered. The King promptly moved on to his next objective, the sturdy garrison at Setenil ($Hisn\ Sh\bar{\imath}tn\bar{\imath}l$). Setenil, corridor to Granada's west province, had defied the Marqués of Cádiz two years before. 93 But now the hisn confronted a more muscular and complex assault.

Setting in the big guns (lombardas), the King ordered them fired at two great towers at the entrance to the gates. These fired

- 87. Pulgar, Crónica, 2: 75-76; Palencia, Guerra, 107; Castilian, "La Historia," 47.
- 88. Pulgar, Crónica, 2: 76-79; Palencia, Guerra, 108; Bernáldez, Memorias, 135.
- 89. Mártir, DIHE, 9:55-56.
- 90. Palencia has Ferdinand explain to skeptical noblemen that the towns here were the most vulnerable in Granada and "least able to resist our artillery and war machines" (121). See also Pulgar, Crónica, 2: 117-19; Bernáldez, Memorias, 152.
- 91. Pulgar, Crónica, 2:120-23; Bernáldez, Memorias, 152; Valera, Crónica, 179-81.
 - 92. Palencia, Guerra, 122.
- 93. Setenil had been bruised by Castilian cannonballs in 1408. "Infante Don Fernando set up his camp before Setenil and surrounded it on every side, each day assailing it with bombards." (G. Diaz de Gamez, El Vitorial, ed. and trans. by J. Evans as The Unconquered Knight [New York, 1928], 195-202.)

as directed until, in three days, they had reduced the wall to great chunks of rubble. The *cerbatanas* and *pasabolantes* and *rabadoquines* fired [so as to] hit city houses, killing men, women, and children, and wreck homes. Such was the terror the firearms inspired and the carnage and ruin inflicted upon the Moors they could not endure it.⁹⁴

The accounts of Setenil's fall revealed a rapidly maturing understanding of interlocking fire among Spanish crews. Pulgar pointed out how smaller guns served to turn back sorties from the city by spraying raiding parties with small, deadly shot. Thus each type of weapon, heavy, medium, or small, provided mutually supporting fire delivered in mass. Setenil proved that siege guns, with supply, security, and mobility problems overcome, might indeed rip the whole realm of Granada open.

After 1485, the war escalated from nipping off castles to capturing cities. The infirmity of the now blind $Ab\bar{u}$ l-Ḥasan in 1485 muddled the succession, leaving son $Ab\bar{u}$ Abdull $\bar{u}h$ plotting at Guadix in the east, brother Muḥammad az-Zaghal in the Alhambra, and the western $q\bar{a}$ ids confused and isolated. Moving out of the border region with a train that included over 1,500 carts to support his artillery alone, Ferdinand blasted his way through outnumbered garrisons at Benamaquis, Coyn $(Hisn\ Dik\bar{u}y\bar{n})$, and Cartama $(Hisn\ Qart\bar{a}mah)$. His objective was Ronda, the provincial capital of Granada's west, protected by walls of legendary repute. Now the King faced regulars backed by horsemounted raiders hiding throughout the countryside. His communications dangerously exposed to these predators, survival meant the city had to be brought down quickly.

The bombardment was so heavy and so constant that the Moors on watch could hear each other only with great difficulty... nor did they know which sector most needed support, for in one place the cannon knocked down the wall and in another wrecked the houses and, if they tried to repair the damage made by the lombardas they could not, for the unending hail of fire from smaller weapons killed anybody on the walls.⁹⁷

By encircling Ronda with cannon, the Anonymous Granadan noted, Ferdinand made defense impossible. Within two weeks, the populace sued for peace and opened its gates in exchange for their lives. The King

^{94.} Pulgar, Crónica, 2: 127-28; see also Bernáldez, Memorias, 154-55; Palencia, Guerra, 131-33; Valera, Crónica, 182-84; Mártir, DIHE, 9: 57-58.

^{95.} Bernáldez, Memorias, 156 of 155-57; Pulgar, Crónica, 2: 152-62; Mártir, DIHE, 9: 56-57; Palencia, Guerra, 142-43; Nubdhat, A: 13, S: 16.

^{96.} Pulgar, Crónica, 2: 164–78; Bernáldez, Memorias, 157–64; Valera, Crónica, 187–203; Palencia, Narrato Belli Adversus Granatenses, 144–46; Nubdhat, A: 13–14, Sp: 16; al-Maqqarī, Nafḥ aṭ-Ṭīb, 4: 516.

^{97.} Pulgar, Crónica, 2:170-71.

moved on to harvest the towns in Ronda's orbit, each time deploying his artillery with increasing dexterity. Finishing a triumphant 1485 by taking Cambillos (Hiṣn Qanbīl), Ferdinand credited victory to his "terrible war machines" while the anonymous Granadan bemoaned how Christian cannons "martyred helpless Muslims on their own walls."

Alora, Setenil, and the conquests of 1485 convinced both sides that the entire character of Hispano-Maghribi war was changing before their eyes. Maqqarī was aghast at how artillery swept all before it. ¹⁰⁰ Besides the physical damage, cannon inflicted extraordinary psychological agony on the besieged ("Nothing terrified the Moors like the pounding of the artillery"). ¹⁰¹ Citing the example of Marbella, Ronda's small, strategic port, Pulgar marveled at how many towns and forts surrendered as soon as the gunners began laying in their sighting stakes. ¹⁰² The Moors inflicted a punishing field defeat on the horsemen of the Count of Cambra, but this traditional-style victory meant nothing. Abū 'Abdullāh, whose intrigues were expected to aid Ferdinand by disrupting az-Zaghal's allies, proved not only inept, but unnecessary. ¹⁰³ The cannons of Castile required no fifth columnists to open walls and gates.

With the western quadrant of Granada occupied, Ferdinand intensified his campaigns the next year. Loja, scene of his 1482 defeat, met his guns again in 1486. 104 Abū Abdullāh, reconciled with az-Zaghal, held the defense, but this time, against "days of uninterrupted cannon fire," Loja crumbled. With Loja and Abū Abdullāh firmly in hand, Ferdinand turned back to Illora, the grain depot whose walls he tested in 1483.

Eighteen of the biggest lombardas were set up, divided into three groups. To guard these and others, the King ordered the horsemen and the infantry of the towns of Jaen, Andujar, Ubeda, and Baeca to stand posts in places around the gun sites. The rest went with all the other firearms, quartados, pasabolantes, and cerbatanas, firing on the town, destroying turrets and a large part of the wall. Likewise, they fired upon the houses and exits,

- 98. At Alhauar (Ar. al- $Haw\bar{a}r$): "The Master of Artillery set up the lombardas with amazing speed, dividing them into two batteries and scattering individual pieces around to cover diverse places" (Pulgar, Crónica, 2: 200-201).
- 99. Nubdhat, A: 15, Sp: 18-19, Pulgar, Crónica, 2: 197-200; Palencia, Guerra, 153; Bernáldez, Memorias, 164-66; al-Maqqarī, Nafḥ aṭ-Ṭīb, 4: 516-17.
 - 100. Al-Maqqarī, Nash at-Tīb, 4:515-16.
 - 101. Palencia, Guerra, 121-23, 179.
- 102. Pulgar, Crónica, 2: 178-87. Marbella became a hub for coastal transshipment of artillery and stores (Palencia, Guerra, 147, 148).
 - 103. Al-Maqqarī, Nash at-Tīb, 4:516-17; de Baeza, La cosas, 29-37.
- 104. Nubdhat, A: 17, Sp: 20-21; Bernáldez, Memorias, 167-68; Pulgar, Crónica, 2: 212-27; Valera, Crónica, 150-60; 187-203; Palencia, Guerra, 163-66; al-Maqqarī, Nafh at-Tīb, 4: 517-18; Mártir, DIHE, 9: 94.

killing and destroying all [in range], with quartados and ribadoquines. 105

Remaining on the north central plains, Ferdinand assailed Moclin (Ar. Muklin) and took it in three short, vicious days.

All eighteen lombardas began at once as a unit, firing on the three principle towers of the citadel. They went on firing . . . so fast, day and night, that there was never a moment that the reverberation of one gun after another was not heard. 106

Moclin may have hastened its own defeat by touching off a horrendous accidental explosion in a powder magazine. ¹⁰⁷ After Loja and Moclin, Ferdinand again released Abū Abdullāh with a new pledge of fealty, a fealty the prince promptly honored by denouncing Muḥammad az-Zaghal, his uncle. With the Granadan ruling house split, Castilian guns claimed their final victims for the year, toppling hisn fortresses at Colomera (Ḥiṣn Qalibīyrah) and Montefrio (Ḥiṣn Mantafarīd). ¹⁰⁸ These last victories lay open Granada's north central highlands and released a flood of wolfish raids by border nobles.

Ferdinand devoted 1487 to the subjugation of Málaga, the Amirate's second largest shiya khāṣṣa garrison and a major port. In April, 60,000 crusaders encircled Vélez-Málaga to shut Málaga off from the capital. Clashes between partisans of Abū Abdullāh and Muḥḥammad az-Zaghal cut down Granadan forces available to aid Vélez, but Christians had to take the high-walled city themselves. 109 The King's cannons overcame the town in short order, despite a strong resistance that included numerous firearm skirmishes. 110 By May, Ferdinand had tightened the noose on Málaga and brought up his artillery, including a battalion of cannons christened the "seven sisters of Ximenes." 111 In

- 105. Pulgar, Crónica, 2: 230 in 227-31; Nubdhat, A: 18-19, Sp: 21-23; Palencia, Guerra, 166-67; Valera, Crónica, 204-8; Bernáldez, Memorias, 169.
 - 106. Pulgar, Crónica, 2:234.
- 107. Al-Maqqarī, Nafh aṭ-Ṭīb, 4: 518; Pulgar, Crónica, 231-36; Palencia, Guerra, 167; Mártir, DIHE, 9: 94.
- 108. Palencia, Guerra, 2: 167-69; Pulgar, Crónica, 2: 236-41; Nubdhat, A: 18-19, S: 22; al-Maqqarī, Nafh αt-Tīb, 4: 518; Mártir, DIHE, 9: 74-76.
- 109. Al-Maqqarī blamed the feud between uncle and nephew for the fall of Vélez-Málaga and Málaga, arguing that the townsmen had thought themselves protected from Castile by the truce between Ferdinand and Abū- Abdullāh and that each blocked the other from sending aid (Nafh at-Tīb, 4:519-20).
- 110. Palencia again editorialized that "Nothing unnerved the Moors more than the battering of the guns" (Guerra, 2: 179 of 177-82); Bernáldez, too, observed the terror which greeted the sight of Ferdinand's cannons as they set up (Memorias, 175-76 of 173-80); Pulgar, Crónica, 2: 270-79; Nubdhat, A: 22-23, Sp: 25-26.
- 111. Pulgar, Crónica, 2: 281-336; Valera, Crónica, 229-65; Bernáldez, Memorias, 180-201; Nubdhat, A: 24-25, Sp: 27-29; Mártir, DIHE 9: 95-100; and Palencia, Guerra, 183 of 182-96, also say 60,000 men.

reply, "the inhabitants made a desperate defense by firing their artillery from the walls and by frequent sallies of cavalry." ¹¹² On the ocean side, the fleets of Castile and Aragon sealed the coastline and, at times, engaged in ship-to-shore support fire and landing operations. ¹¹³ Mining and counter-mining under the walls led to subterranean battles between townsmen and *zapadores* (sappers). ¹¹⁴ Led by several thousand regulars, *ghumara* mercenaries, and ^{culuj} Europeans, Málaga hoped to outlast the King beyond the traditional campaign season. ¹¹⁵ Such outmoded strategy no longer worked. A herculean resupply fed the voracious appetite of Spain's gunpowder weapons. Málaga capitulated in August. ¹¹⁶

Historians depict 1488, "the most enigmatic year of this puzzling war," as a chronological break, a distinct breathing space between the long conquest of western Granada and the grand siege of Baza (Ar. Bastah) in 1489. 117 In fact, however, no such break occurred. True, 1488 lacked the pulverizing sieges of previous years, but there was nothing enigmatic about Ferdinand's relentless annexation of Granada's northeastern towns. 118 On the surface, diplomacy seemed to displace brute force in the capitulation of Huescar, Vera, and the Sierra Baza frontier. Six years of constant war imposed the climate that made more subtle duress effectual, and force backed both diplomats and bribes. Spanish artillery, perhaps heard less often in 1488, did not fall silent—especially in the coastal region of Almeria. 119 1488, if anything, was not really a pause after the great sieges of the year past, but just a less spectacular progression on the road to absorption of the eastern third of the Amirate.

Ferdinand spent nearly the first half of 1489 preparing for Baza, the largest fortress in Muḥammad az-Zaghal's domain, endowed by its mountainous surrounding with natural and man-made defenses. 120 As

- 112. Bernáldez, Memorias, 180; also al-Maqqarī, Nafh at-Tīb, 4:520-21; Palencia, Guerra, 2:184-85; Valera, Crónica, 257 of 238-41.
 - 113. Pulgar, Crónica, 2:321-22.
 - 114. Valera, Crónica, 260, 264-65.
- 115. Converts took a new given name, but often kept family names or titles. Hassan de Santa Cruz was a 'ilj commander at Málaga (Fernández, El Tiempo de la Guerra de Granada, 152).
- 116. Pulgar, Crónica, 2:326-35; Palencia, Guerra, 193-97; Bernáldez, Memorias, 180-99; Valera, Crónica, 238-67.
 - 117. Harvey, Islamic Spain, 301.
- 118. Spain took as much territory in 1488 as in the first six years of the war combined. See Palencia's list in *Guerra*, 206-7; Bernáldez, *Memorias*, 201-5; al-Maqqarī, *Nafh at-Tīb*, 8: 521; Mártir, *DIHE*, 9: 100-102; Castilian, "La *Historia*," 52-53; note Dr. Carriaza's map in "Historia de la Guerra de Granada."
 - 119. Palencia, Guerra, 209-12; Mártir, DIHE, 9:34-35, 38-39.
- 120. Nubdhat, A: 25-27, Sp: 29-31; Pulgar, Crónica, 2: 367-94, 398-431; Palencia, Narrato Belli Adversus Granatenses, 2: 200-202, 209, 217, 222-36; Bernáldez, Memorias, 206-12; Castilian, "La Historia," 53.

a military shiya khāṣṣa city, the garrison contained a large force of regular troops. Baza's qā'id, Yaḥyā an-Najjār, knew Muḥammad would deploy the Gaudix jaysh to bedevil his tormentors and disrupt the encirclement. Thus, as described by Mártir, the royal artillery received the central role early in the offensive, beginning in June with the reduction of Zūjar, the hiṣn blocking the march to Baza. The struggle went on from June to December, prolonged beyond any previous siege in part because terrain confounded movement and impeded emplacement of the great "wall-smashers." Muslim crossbow fire, espingards, and buzanūs guns made approaching Baza or even cross-country movement hazardous. Queen Isabel pawned her jewels in Valencia to raise cash to keep the troops in the field while Ferdinand threatened defeatists with excommunication, disenoblement, and prison. But, with December's arrival, a starving Baza surrendered to the Christians "and their artillery and siege machines." 125

Before Castile's army began its trek to Baza, Amir Abū Abdullāh, enthroned in Granada, had declared Muḥammad a rebel and asked his vassals to assist Ferdinand against his uncle. Defeated and trapped between the Christian invaders and his implacable nephew, Muḥammad az-Zaghal sought surrender terms for his cities, Gaudix and Almeria. 126 The capitulations he received were not ungenerous, at least to individuals. With every former $q\bar{a}$ 'id of az-Zaghal serving as their agents, the Catholic Monarchs consumed most of eastern Granada by January of 1490 "with no fighting, no need for sieges, no exertion or trouble at all." 127 Autonomous Granada had now shrunk to a territorial heartland, the capital city itself in mountainous Alpujarras and the small towns and villages of that region. Technically, since $Ab\bar{u}$ Abdullāh had accepted vassalage under Ferdinand, even that patch was no longer sovereign.

^{121.} Ladero-Quesada estimated Granadan forces at 8,000 regulars with innumerable militia against 50,000 Spaniards (*Milicia*, 18–19, 41; al-Maqqarī, *Nafḥ αṭ-Ṭīb*, 4: 521–22). Palencia placed Spain's army at 13,000 cavalry and 60,000 infantry (*Guerra*, 216).

^{122.} Mártir, DIHE, 9: 112-17; Palencia, Guerra, 222-23.

^{123.} Light pieces could cover the city gates, ambush sites, and troops on the walls but the big guns proved too cumbersome (Palencia, Guerra, 2: 232); Bernáldez, Memorias, 208; the Anonymous Granadan also observed the impediments terrain imposed on cannon (Nubdhat, A: 26, S: 29-30; Mártir, DIHE, 9: 117-21; CDIHE, 11: 460-75.

^{124.} Pulgar, Crónica, 2:413-19.

^{125. &}quot;al-madāfa" wa ālalāt" (4:521).

^{126.} Palencia, Guerra, 238-39. Muḥammad az-Zaghal also handed over the port of Almeria, "source of uncountable harm because of its openness to Moroccan and Tunisian fleets in the port." Pulgar, Crónica, 2: 432-36; Bernáldez, Memorias, 210-15; al-Maqqarī, Nafḥ at-Tīb, 4: 522-23.

^{127.} Nubdhat, A: 26-27, S: 32; Mártir, DIHE, 9: 139-42.

On 18 January 1490, the monarchs wrote to Seville that the war was all but over. 128

Fourteen ninety also marked the real beginning of a new, third and final stage in the Granadan War, a virtual reversion to the medievalstyle attrition siege. Ferdinand would not take Granada City in the same kind of apocalyptical artillery assault that delivered Constantinople to the Ottoman Turks thirty years earlier. 129 Cannons had made possible the fall of Baza and, with it, the collapse of Muhammad az-Zaghal and the chain of cities, fortresses, and communities dependent upon him. But urgency, as well as opportunity, drove those operations by the military necessity to complete the campaign before Amirate reinforcements arrived, before Castilas nobles became restive, before winter set in, before money and powder and food ran out. Now, with time newly his ally, Ferdinand began encircling the city while giving his nobles license to plunder the surrounding countryside with their tala raids. Isolated from the capital, other Muslim towns, villages, and estates resisted and were savaged or negotiated submission to royal agents. Already, a desperate Amir Abū Abdullāh was frantically trying to prove his patriotism by battling his way to the coast, a futile gesture since the sea belonged to the gunships of Aragon. 130

Not until April of 1491 did Ferdinand and Isabel take the field against Granada in earnest, leading an army numbering up to 80,000.¹³¹ The hapless Abū Abdullāh ruled a city already strained by its own defiance, and its populace swelled with refugees.¹³² The Catholic Monarchs came ready to both outfight and outlast Granada, and the siege lasted eight months. The camp built to command the siege became a city itself, Santa Fé. Chronicles on both sides record the valorous deeds of both Christians and Muslims in skirmishes outside the walls and in the hinterland, but these are romances of contending horsemen and steadfast foot soldiers, not cannon duels.¹³³ True, the King kept his artillery close by, the Amir had his cannon (noted in an account of his surrender as bombardas and cañones), and the guns periodically

- 128. Fernández, El tiempo de la Guerra de Granada, 160.
- 129. That October, he even chose to release some of his foreign gunnery masters from their contracts and send them home (lbid., 238-39). Note also Vigón, Artillería, 98-99.
- 130. al-Maqqarī, Nafh aṭ-Tīb, 4: 522-23; Nubdhat, A: 32, Sp: 43-44; Bernáldez, Memorias, 216-21; Pulgar, Crónica, 2: 444-48; Castilian, "La Historia," 53-54.
- 131. Arié, L'Espagne Musulmane, 175-78; Nubdhat, A: 36-46, Sp: 43-53; Bernáldez, Memorias, 216-23; Mártir, DIHE, 9: 156.
- 132. de Santa Cruz, Crónica, 1:29-34; Pulgar, Crónica, 2:449-50; Mártir, DIHE, 9:161-68.
- 133. Anonymous, "Continuación de la Crónica de Pulgar (por un anonimo)," ed. Don Cayetano-Rosell, *Biblioteca de Autores Españoles*, vol. 70 (Madrid, 1878), 513-17 of 513-51.

interjected themselves into fights, but Ferdinand was not one to waste powder. By November, secret talks to end the siege—and Granada's existence—were all but complete. On 2 January 1492, Ferdinand and Isabella entered Granada leading three thousand cavalry and two thousand espingarderos, a neat mix of traditional and modern arms. ¹³⁴ Predictably, one of their first acts was to inspect the Amir's artillery and order the populace to turn in all firearms, the one exception to the promise that Muslims could keep personal weapons. ¹³⁵

"It took ten years for the Greeks to capture Troy, ten years for Caesar to conquer Gaul, and ten years of annual campaigns for Mi'lord to grind down, overcome, and destroy these Moors." 136 Pedro Mártir's begrudging tribute to the valor of Granadans and the resilient terrain of their gritty little nation returns us to why artillery operations deserve primacy in any explanation of Spanish victory. Against this position, some have argued that dynastic feuds, at times erupting into civil war, destroyed national cohesion and all but handed Granada over to the King. 137 Abū Abdullāh's repeated treacheries against his father and uncle, which at times included armed attacks against fellow Muslims in aid of Christian invaders, epitomized the self-destructiveness of the ruling elites. Castilian intrigue manipulated and exploited these internal fissures while using the army to demoralize the populace. Framing an explanation which pays homage to the early modern ecological war, Harvey suggested Granada fell because of a comparative economic, agrarian, and demographic inferiority that Castile exacerbated through prolonged environmental destruction. 138 By these lights, Ferdinand's campaigns were but flash, color, and noise behind a collapse preordained by Granada's enfeebling instability and economic deficiency or the King's Machiavellian adroitness.

Such explanations seek the primary cause for a major military outcome in the internal dynamics of one combatant rather than the unfolding of the war itself. One side does not so much win as the vulnerabilities of the other bring on its own defeat. But in Granada's case, domestic-factors-first arguments are more problematic than directly apparent. First, there is an whiff of stereotyping when doom is attributed to some almost congenital Muslim addiction to political revolt. Every

^{134.} Bernáldez, Memorias, 231; M. del Pescador del Hoyo, "Comó fué de verdad la toma de Granada," Al-Andalus 20 (1955): 283-334.

^{135.} Forfeiture of all gunpowder weapons ("tiros de polvara") to the crown was a clause in all capitulation treaties (e.g., see the treaty with Almeria in *CDIHE*, 476, and Harvey's study of the 1491 surrender of Granada [Islamic Spain, 314-22]).

^{136.} Mártir, DIHE, 9:177.

^{137.} For example, L. S. Lucena-Paredes, "Panorama politico del Islam granadino durante el siglo XV," Miscelanea de estudios árabes y hebraicos 9 (1978): 7-18). 138. Harvey, Islamic Spain, 267-68.

Christian Iberian state passed through similar periods of turmoil and, throughout the war, the prospects of uprisings haunted Ferdinand and Isabel. Second, the affliction of dissent no less than Harvey's conditions of economic decline and diplomatic isolation had plagued Granada since the late fourteenth century, long before 1481. Given that these infirmities persisted along with repeated invasions from Castile since the 1380s, why did these cancerous debilities not bring Granada down long before this war?

Quisling or not, "Boabdil's" desertions and dalliances with Castile caused neither major defections nor demonstrably undermined resistance. Granada's most damaging loss, that of Muhammad az-Zaghal, came only after his total defeat at Baza late in the war. That the last Reconquista coincided with a civil war is important—but not decisive. If internal tumult was decisive, why was Granada not conquered before or faster? Old-style tala warfare had a place in Ferdinand's strategy, but these tactics provided few gains when they dominated the 1481-83 operations and only came back into their own in the end-game phase. Besides tactics, comparison of Castilian and Granadan forces show that both armies used quite similar field organizations once the crucial variable of Spanish artillery is discounted. The clearest immediate explanation for the fall remains military—the emergence in Spain of armies with plentiful supplies of gunpowder weapons and the superiority of these forces in artillery operations. Artillery was the decisive variable, yielding victory after victory against a resistance that usually gave little hint of internal decay, at least until the cannons opened up. Unrelenting and overwhelming armed force, not the internal feuding of Nāṣrid elites, undid Granada.

By moving artillery from a supporting to primary role, Ferdinand and Isabel transformed the style of Spanish warfare from a static choreography of plunder raids and border adjustments into a total war of annexation. The Granadans were not "gunless" but they were outgunned. The Castilian advantage was not just superior number of weapons, but their mobility and offensive tactics. In defense, cannons were daunting, but placing them in fixed positions exposed them to massed suppressive fire. In field attack, artillerymen could move their guns to different positions while engaging the same wall, turret, or gate. Blessed with slow but open supply lines, the Castilians might run low on powder, shot, and supplies but they never feared running out. Every Castilian victory meant an increased loss of resources to Granada. In the end, Granada artillery served as little more than a glorified obstacle. For Spain, artillery formed the wedge which systematically pried Granada apart, hisn by hisn, ribāt by ribāt, town by town.